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Enhancing Portfolio Performance Assessment: The Role Of Ai In Risk And Return Analysis Using Secondary Data

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Abstract

This study uses secondary data sources to investigate how artificial intelligence (AI) can improve portfolio performance assessment by analyzing risk and return. The study intends to assess risk metrics, project future returns, and examine historical data to offer a thorough grasp of portfolio performance by utilizing AI tools and methodologies. The results demonstrate how AI can increase risk and return assessments' efficiency and accuracy while providing investors with faster and more accurate insights. The study emphasizes the value of AI in contemporary portfolio management and shows how it can transform the financial industry by improving investment strategies. This study does not use primary data collection, interpretation, or analysis; instead, it only uses secondary data from various publications and reports and furnishes future scope of study.

Introduction:

In today's highly dynamic and interconnected financial markets, assessing the performance of a portfolio has become more intricate and challenging than ever. Traditional methods of portfolio analysis, which rely heavily on historical data and standard risk-return models, often fail to capture the complexities and rapidly shifting conditions of the global financial landscape. As investors increasingly seek to optimize their portfolios for higher returns while minimizing risks, they are turning to more advanced tools that can process and analyse a wider range of data.

One of the most revolutionary technologies in this field is artificial intelligence (AI). Compared to traditional methods, artificial intelligence (AI) allows investors to analyze large amounts of structured and unstructured data much more quickly and accurately by utilizing advanced algorithms, machine learning models, and big data analytics. AI provides previously impossible, if not impossible, insights from traditional datasets by processing secondary data.

Secondary data is now an essential tool for comprehending the subtleties of market behaviour. AI can, for instance, giving real-time information about how the public or investors feel about a specific stock or asset. In a similar vein, AI can analyze market indicators, macroeconomic data, and news about geopolitical events to forecast how they might affect a portfolio. In addition to improving the depth of portfolio analysis, this moves toward incorporating data from multiple sources enables investors to identify opportunities and hazards that they might otherwise overlook.AI can also aid in the creation of increasingly complex risk models that consider intricate, non-linear relationships among the various variables in a portfolio. A more

sophisticated approach to risk management is provided by machine learning algorithms, which are able to learn from historical market behaviours and predict possible future outcomes based on a wider range of factors. Investors can make more timely and well-informed decisions thanks to this dynamic, data-driven approach, which enables portfolios to adjust to changing market conditions more quickly.

Another significant benefit of AI over conventional techniques is its capacity to continuously update and improve risk and return assessments in real time. Investors gain from more precise projections and a better comprehension of the underlying principles as AI systems continuously learn and adapt in response to new data inputs.

This article explores how artificial intelligence (AI) is revolutionizing portfolio performance evaluation, with a particular emphasis on how it improves risk and return analysis by utilizing secondary data. A wide range of data sources will be processed and analysed by AI tools to give investors actionable insights. This will enable investors to adopt more intelligent and flexible investment strategies that are better suited to the intricacies of contemporary financial markets.

Need for the study:

Traditional methods of portfolio performance evaluation often fail to fully capture the complexities of modern financial markets. As investors seek more accurate tools to manage risk and maximize returns, AI offers a powerful solution. By leveraging AI to analyse vast data sets and predict trends, this study aims to enhance risk-return analysis and improve portfolio optimization. Understanding AI's impact on fund performance is crucial for investors looking to refine their strategies and navigate the uncertainties of the financial landscape.

Scope of the study:

This study's objective is to investigate how artificial intelligence (AI) affects portfolio performance evaluation by utilizing secondary data sources to analyse risk and return. It entails looking into different AI tools and methods for assessing risk metrics, projecting future profits, and examining past data. The purpose of the study is to evaluate how AI can improve the precision and effectiveness of risk and return analysis in portfolio management. The study makes inferences and conclusions without the need for primary data collection by using data that has already been collected from publications and reports. The results demonstrate how AI may help investors make better decisions by offering faster and more accurate evaluations. This study does not include primary data collection, interpretation, or analysis, focusing solely on secondary data to understand AI's role in portfolio performance assessment.

Review of literature:

AUTHOR(YEAR)	OBJECTIVE	METHODOLOGY	FINDINGS
• Khaira Amalia Fachrudina Hilma Tamiami Fachrudina (2015)	The study aims to analyse the property portfolio and sustainability in real assets.	Data Analysis (Descriptive Statistic, Correlation, Logistic Regression, First Model)	Improving assets gives higher returns, and having a diverse property portfolio with a focus on sustainability helps increase revenue.
• Kristina Sutiene, Peter Schwendener, Ciprian Sipos, Luis Lorenzo, (2024)	To review how AI is transforming portfolio management.	Literature review of AI applications in portfolio management.	AI produces better asset return and risk estimates, solving complex portfolio optimization problems.
• söhnke m. bartram, Jurgen branke, and mehrshad Motahari (2020)	To examine AI's role in asset allocation decisions.	Analysis of AI techniques in asset management.	AI techniques improve fundamental analysis and generate novel investment strategies.
• Shilpa Sokki, Bagali Ambreen, Dr. Shaheeda Banu S (2024)	to analyse the impact of risk and return on mutual funds. - To identify significant areas of control.	Utilized AI algorithms to analyse historical data of selected mutual funds. - Used performance metrics like Sharpe Ratio, Treynor Ratio, and Jensen's Alpha.	AI enhances the accuracy of risk and return predictions. - Certain mutual fund schemes consistently outperform others.
• Ashok Bantwa (2012)	To examine the performance of large and mid-cap mutual fund schemes	valuated performance using Sharpe, Jensen, Treynor, and FAMA measures.	Most schemes performed better than the market. - High-performing schemes exposed to higher risk.
• Shivani, Dr. S. Baskaran (2024)	To assess the performance of selected equity mutual funds in India.	- Analysed risk and return metrics such as Sharpe Ratio, Treynor Ratio, and Jensen's Alpha	Highlighted the risk-adjusted performance of five prominent mutual funds.
• Manish Jain	To explore the use of AI tools for portfolio performance tracking	Discussed various AI tools for real-time insights, risk analysis, and predictive analytics.	Highlighted tools like Mezzi, Sentieo, Kavout K Score System, etc.
• S.P Kothari, Jerold b warner (1997)	To evaluate the performance of large and mid-cap mutual fund schemes	Analysed performance using Sharpe, Jensen, Treynor, and FAMA measures during 2007-2011.	Evaluated average returns, systematic risk, and unsystematic risk.
• Dr.K. Mahesh, Sujata S.L.	A study on the Risk and Return Analysis of Mutual Funds (Equity Midcap)	Focused on control mechanisms and significant areas of control.	Offered insights into investment efficiency and risk management.

• Mohammad Salem Oudat, Basel J. A. Ali (2021)	This research examines financial risks and performance of banks listed on the Bahrain Stock Exchange from 2015-2019 using panel regression analysis.	Comprehensive Financial Analysis Techniques.	The study analysed financial risks and performance of Bahrain-listed banks, finding key links between capital, exchange rate risks, and returns.
• Marwan Mohamed Abdeldayem (2015)	Here the study examines the impact of investors risk perception on portfolio management in Bahrain and develop a model to evaluate this relationship.	Pilot study, statistical analysis.	This study's limitations, such as its small sample size and reliance on convenience sampling, highlight the need for future research with larger, more diverse samples and direct investor interviews.
• Benjamin mpumwire, Patrick mulyungi (2018)	The researchers has analysed the impact of risk diversification, asset rebalancing, and asset allocation on the financial performance of Rwanda Development Bank.	SPSS for analysis, Cronbach's Alpha (0.924) for reliability	The effective portfolio management, including risk diversification, asset rebalancing, and asset allocation, significantly enhances the financial performance of Rwanda Development Bank.
• Ezekiel kingori kamwaro (2008)	The objective of this study is to determine the impact of investment portfolio choice on the financial performance of investment companies listed on the Nairobi Securities Exchange.	• Secondary Data • Regression analysis	The study concluded that investment portfolio choices in bonds, real estate, and equity, along with company size, positively impact the financial performance of investment companies listed on the Nairobi Securities Exchange.
• Lydia Dzidzor Adzobu, Elipkimi Komla Agbloyor, Anthony Aboagye (2017)	The article determines to assess the impact of sectoral credit portfolio diversification on the credit risks and profitability of banks in Ghana, particularly in light of high non-performing loans in	Construction of diversification measures, Panel specification, Estimation Technique, Robustness tests.	The study finds that loan portfolio diversification reduces profitability and increases risk for Ghanaian banks, challenging traditional banking theory.

	the country's banking sector.		
• Hamid Reza Vakili Fard, Mahmood Ansar and Amir Yekezare (2014)	The objective of the paper is to develop the A-Y Model to measure portfolio performance by analyzing risk-return tradeoffs during bull and bear markets.	• Statistical analysis	The paper concludes that the A-Y Model effectively measures portfolio performance, reducing risk and increasing return, despite market changes during the bull and bear markets.
Dr Gongera Enock George, Dr Julius B. Miroga, Njoroge Wilson Ngaruiya, Robert Mindila, Simion Nyakwara, Mosoti Jared Mobisa, Ongeri Joseph, Evans N. Mandere, Dr Makori O. Moronge (2013)-	The study investigates the determinants of profitability in commercial banks in Kenya, focusing on loan portfolio, interest expense, administration costs, and asset value.	• Survey design, sampling, SPSS, multicollinearity, and autocorrelation tests.	The article concludes that local Kenyan commercial banks are more profitable than foreign-controlled ones, with domestic banks showing better profitability, while foreign banks are more capital efficient.
• Artor Nuhiu, Florin Aliu, Jakub Horak, and Bedri Peci (2023)-	The study aims to analyse the risk-return trade-offs and diversification benefits of the most tradable cryptocurrencies from 2016 to 2022.	Portfolio Diversification and Estimations with Facebook Prophet	The study analyses the risk-return trade-off of top cryptocurrencies, showing that diversification improves returns and reduces risk, with suggestions for future research on broader portfolios and dynamic risk tracking.
• Eduardo Ortas, José M. Moneva, Manuel Salvador (2013)-	The study assesses whether social and environmental screening processes impact the financial performance of Socially Responsible Investment (SRI) strategies in Europe.	Econometric models, sample delimitation and descriptive analysis,	The researcher concludes that while SRI equity indexes offer similar returns to conventional benchmarks, they carry higher risk, especially during market downturns, with no clear financial advantage over traditional investments.

• Patrick Roberts, Lauren Hamilton Edwards (2023)	The article aims to explore how portfolio management can guide organizational choices in public administration by balancing risk with public value and mission outcomes.	Portfolio Management Tools, Strategic Management Framework, Theoretical Analysis.	The researcher emphasizes the need for further research into portfolio management in the public sector to improve public value and strategic management practices while acknowledging potential challenges like increased costs and mission drift.
• Elaine Worzala, G. Sirmans & Emily Zietz (2020)-	The objective of the study assesses whether portfolio managers perceive the inherent risk of an asset as consistent with its expected return.	Data collection, asset selection, hypothesis, testing, segmentation, interpretation.	The article reveals that institutional investors perceive risk and return differently across asset classes, which may explain discrepancies between actual and theoretical asset allocations.
• R.V. Naveenan (2019)	The study examines equity market behavior, evaluate market trends, and optimize portfolio construction to maximize returns and manage risk effectively.	data analysis and interpretation	The dissertation emphasizes the need for more research, transparency, and expertise in Portfolio Management Services (PMS) to benefit investors and the economy.
• Andrea masini (2013)-	The objective is to examine the factors influencing investment decisions in renewable energy technologies and assess how the share of renewable energy in a portfolio affects performance.	Conceptual Model Development, Data Analysis, Sample Selection, Operationalization of Variables	Investing in renewable energy requires understanding investor behavior and addressing psychological factors to effectively reduce carbon emissions.
• Muhammad Wajid Razaa, Dawood Ashraf	The paper aims to evaluate the impact of smart beta strategies on Shariah-compliant equity portfolios' performance.	Portfolio Analysis	This study advocates for smart beta strategies over market capitalization weighting in Shariah-compliant equity portfolios to enhance returns and reduce risk.

• Bertrand Maillet Sessi Tokpavi Benoit Vaucher (2013)-	The objective of the study is to create a robust portfolio that mitigates parameter uncertainty while improving stability, variance, and risk-adjusted returns compared to traditional minimum variance portfolios.	Optimization Techniques	The paper proposes a robust global minimum variance portfolio strategy that reduces parameter uncertainty, improving portfolio stability, variance, and risk-adjusted returns.
• Michal Kaut Stein W. Wallace (2003)-	The study aims to assess the impact of statistical errors in stochastic parameters on the stability and performance of a CVaR-based portfolio management model.	Stability test, portfolio model, data analysis.	The study highlights the importance of accurately estimating higher-order moments and using large scenario sets for stable and reliable CVaR-based portfolio optimization.
• Michael R. Walls (2004)	The objective is to enhance risk management and decision-making in the upstream petroleum industry through the integration of decision analysis and portfolio management.	Portfolio Optimization	The study emphasizes the need for a systematic portfolio management approach in oil companies to optimize investments, manage risks, and enhance performance.
• Immas Nurhayati Endri Titing Suharti Renea Shinta Aminda Leny Muniroh-	The paper aims to build a portfolio using the Sharpe single index model and assess the impact of COVID-19 on portfolio performance during the outbreak.	Portfolio Construction	This study analyzes portfolio formation during COVID-19 using the Sharpe Single Index Model, finding underperformance due to global pandemic impacts, and suggesting further research with alternative models.

Data collection method:

Secondary data has been used for this research. The secondary data was collected from the website of Association of Mutual Funds in India, Value Research Websites and Journals Etc.

Research gap

The impact of portfolio performance While AI has been applied to various areas of financial analysis, its specific, particularly regarding risk and return optimization, has a very meagre research studies which were thoroughly examined. Existing research tends to focus on isolated aspects of portfolio management, leaving a gap in understanding the overall effectiveness of AI in enhancing portfolio performance compared to traditional techniques. Additionally, although secondary data is widely used in portfolio analysis, there is limited exploration of how AI can better process and interpret this data to provide more actionable insights. Furthermore, while AI shows high potential in risk detection, more research is needed to explore its full capabilities in identifying and managing risks within portfolios, especially in dynamic and evolving market environments.

Objectives

1.Evaluate the impact of AI on portfolio performance for future studies.

2.Analyze the use of company's secondary data in portfolio risk and return analysis of the studies to be performed.

3.Explore AI's role in identifying and mitigating portfolio risks.

Findings

1. funds show different risk and return levels.
2. Ai improves the portfolio performance.
3. Diversified portfolios perform better for long term.

Conclusion:

This study demonstrates how artificial intelligence (AI) can improve portfolio performance evaluation by employing secondary data for risk and return analysis. The study illustrates how AI can increase the precision and effectiveness of assessing risk metrics, projecting future returns, and examining historical data by utilizing AI tools and methodologies. The results highlight the important advantages of AI in delivering faster and more accurate evaluations, which can help investors make wise choices. All things considered, this study highlights how important AI is to contemporary portfolio management and how it has the potential to transform the financial industry by improving risk and return analysis. While the lack of primary data collection, interpretation, or analysis keeps the study focused, the use of secondary data guarantees a wide viewpoint.

Future scope for further studies

- Further studies can be made on portfolio management by predicting the risk return analysis optimization through AI advance techniques.
- More research studies can be performed to enhance efficient decision making by providing vast amount of data with market changes to the investors by AI implications.
- More advance studies can be taken based on blockchain technologies integrating AI capabilities to enable high secured and scalable financial solutions.

References

- Fachrudin, K.A., & Fachrudin, H.T. The Study of Investment Portfolio Management and Sustainability of Property and Real Estate Companies in Indonesia Stock Exchange (2015). volume 211, page 177. The Study of Investment Portfolio Management and Sustainability of Property and Real Estate Companies in Indonesia Stock Exchange
- Kristina Sutiene, Peter Schwendner, Ciprian Sipos, Luis Lorenzo: Enhancing Portfolio Management Using Artificial Intelligence. (2024)
  Volume 7 - 2024
  | https://doi.org/10.3389/frai.2024.1371502.https://www.frontiersin.org/journals/artificial-intelligence/articles/10.3389/frai.2024.1371502/full
- Söhnke m. Bartram, Jurgen branke, and mehrshad Motahari (2020): Artificial Intelligence in Asset Management.volume 2020. https://www.cfainstitute.org/sites/default/files/-/media/documents/book/rf-lit-review/2020/rflr-artificial-intelligence-in-asset-management.pdf.
- Shilpa Sokki, Bagali Ambreen, Dr. Shaheeda Banu S. (2024): A Study on Risk and Return Analysis of the Selected Mutual Funds.volume 10 https://ijirt.org/publishedpaper/IJIRT170072_PAPER.pdf
- Ashok Bantwa (2012): Risk, Return & Performance Evaluation of Selected Mutual Fund Schemes.volume 2012 https://www.researchgate.net/profile/Ashok-Bantwa/publication/339949067_Risk_return_performance_evaluation_of_selected_mutual_fund_schemes_-_a_study_on_large_mid_cap_funds/links/5faf836d45851518fda2e7e0/Risk-return-performance-evaluation-of-selected-mutual-fund-schemes-a-study-on-large-mid-cap-funds.pdf?origin=publication_detail
- Shivani, Dr. S. Baskaran (2024): a study on performance evaluation of selected equity mutual funds. Volume 6,
  Issue9 https://www.irjmets.com/uploadedfiles/paper/issue_9_september_2024/61802/final/fin_irjmets1727616418.pdf
- Manish Jain (2025): Top 7 AI Tools for Portfolio Performance Tracking.volume 2025
  https://www.mezzi.com/blog/top-7-ai-tools-for-portfolio-performance-tracking.
- S.P Kothari, Jerold b warner (1997): evaluating mutual fund performance. Volume 97 https://leeds-faculty.colorado.edu/bhagat/Evaluating-MFunds.pdf
- Dr.k. Mahesh, sujatha.s. l (2020): A study on the Risk and Return Analysis of Mutual Funds (Equity Midcap). Volume 8, Issue 5, page 442 https://ijcrt.org/papers/IJCRT2005442.pdf
- Oudat, M.S., & Ali, B.J.A. (2021). The Effect of Financial Risks on the Financial Performance of Banks Listed on Bahrain Bourse: An Empirical Study. Volume 10, Issue S1,page 89The Effect of Financial Risks on the Financial Performance of Banks Listed on Bahrain Bourse: An Empirical Study
- Abdeldayem, M.M. (2015). The Impact of Investors' Perception of Risk on Portfolio Management: Evidence from the Kingdom of Bahrain. Volume 7, Issue 12 and it starts on page 1 The Impact of Investors' Perception of Risk on Portfolio Management: Evidence from the Kingdom of Bahrain
- Mpumwire, B., & Mulyungi, P. (2018). Effect of Portfolio Management on the Financial Performance of the Banking Industry in Rwanda: Volume 8, Issue 6 and it starts on page 30Effect of Portfolio Management on the Financial Performance of the Banking Industry in Rwanda: Case Study of Rwanda Development Bank
- Kamwaro, E.K. (2008). The Impact of Investment Portfolio Choice on Financial Performance of Investment Companies Listed on the Nairobi Securities Exchange.volume 2013. The Impact of Investment Portfolio Choice on Financial Performance of Investment Companies Listed on the Nairobi Securities Exchange.
- Adzobu, L.D., Agbloyor, E.K., & Aboagye, A. (2017). The Effect of Loan Portfolio Diversification on Banks' Risks and Return: Volume 43, Issue 11 and it starts on page 1274 Evidence from an Emerging Market. The Effect of Loan Portfolio Diversification on Banks' Risks and Return: Evidence from an Emerging Market.

- Vakili Fard, H.R., Ansar, M., & Yekezare, A. (2014). A Risk-Return Based Model to Measure the Performance of Portfolio Management Volume 2014, Issue 3 and it starts on page 45 A Risk-Return Based Model to Measure the Performance of Portfolio Management
- George, G.E., Miroga, J.B., Ngaruiya, N.W., Mindila, R., Nyakwara, S., Mobisa, M.J., Joseph, O., Mandere, E.N., & Moronge, M.O. (2013). An Analysis of Loan Portfolio Management on Organization Profitability. Volume 4, Issue 10 and it starts on page 1 An Analysis of Loan Portfolio Management on Organization Profitability: Case of Commercial Banks in Kenya
- Nuhiu, A., Aliu, F., Horak, J., & Peci, B. (2023). Making Informed Decisions in the Volatile Crypto Market: An Analysis of Portfolio Risk and Return. Volume 13, Issue 3 and it starts on page 21582440231193600 Making Informed Decisions in the Volatile Crypto Market: An Analysis of Portfolio Risk and Return.
- Ortas, E., Moneva, J.M., & Salvador, M. (2013). Do Social and Environmental Screens Influence Ethical Portfolio Performance? Evidence from Europe. Volume 17, Issue 1 and it starts on page 11 Do Social and Environmental Screens Influence Ethical Portfolio Performance? Evidence from Europe
- Patrick Roberts, Lauren Hamilton Edwards (2023). "Portfolio Management: A New Direction in Public Sector Strategic Management Research and Practice'. Volume 83, Issue 2 and it starts on page 123 Public
- Elaine Worzala, G. Stacy Sirmans, & Emily N. Zietz (2020). "Risk and Return Perceptions of Institutional Investors." Volume 42, Journal of Real Estate Research
- R.V. Naveenan (2019). "Risk and Return Analysis of Portfolio Management Services of Reliance Nippon Asset Management Limited (RNAM). Volume 6, Issue 1 and it starts on page 108" Global Journal of Management and Business
- Andrea Masini (2013). "Investment Decisions in the Renewable Energy Sector: An Analysis of Non-Financial Drivers." Volume 80, Issue 3 and it starts on page 510 Technological Forecasting and Social Change
- Muhammad Wajid Raza & Dawood Ashraf (2017). "Does the Application of Smart Beta Strategies Enhance Portfolio Performance? volume 17 The Case of Islamic Equity Investments." SSRN
- Bertrand Maillet, Sessi Tokpavi, & Benoit Vaucher (2013). "Global Minimum Variance Portfolio Optimisation under Some Model Risk: Volume 244, Issue 1 and it starts on page 289. A Robust Regression-based Approach." European Journal of Operational Research
- Michal Kaut & Stein W. Wallace (2003). "Stability Analysis of a Portfolio Management Model Based on the Conditional Value-at-Risk Measure." Volume 3, Issue 3 and it starts on page 217 Quantitative Finance
- Michael R. Walls (2004). "Corporate Risk Tolerance and Capital Allocation: A Practical Approach to Setting and Implementing an Exploration Risk Policy." Volume 47, Issue 4 and it starts on page 307 Colorado School of Mines